

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A filtering method, comprising:

providing a filter that has at least two dimensions, wherein the at least two dimensions have $N \times N$ coefficients, and the at least two dimensions include a first dimension and a second dimension;

providing zero padding if N is an odd number, wherein the first dimension is padded with a row of zeroes and the second dimension is padded with a column of zeroes;

dividing ~~filter the~~ coefficients of a ~~filter~~ the filter into a plurality of partial portions as ~~coefficients of a corresponding plurality of partial filters;~~ that correspond to a plurality of partial filters;

filtering image data with the plurality of partial filters to generate partial filtered results; and

generating complete filter outputs by combining the partial filtered results; and

at least one of:

(i) storing the complete filter outputs;

(ii) outputting the complete filter outputs; and

(iii) displaying the complete filter outputs.

2. (Canceled).

3. (Currently Amended) The method of claim 1, further comprising:

permitting k^d image data pixels used to generate first partial filtered results to be deleted if the k^d image data pixels are no longer needed to generate the complete filter outputs, the k^d image data pixels being deleted, before generating a next consecutive second

~~partial filtered results without preventing generating the complete filter outputs~~, where $k^d:1$ is a sub-sampling ratio and d is a dimension of the filter.

4. (Original) The method of claim 3, further comprising:
setting d to 2 and k to $N/2$ where N is a span of the filter, a number of image data pixels permitted to be deleted between generating consecutive partial filtered results being $(N/2)^2$.

5. (Original) The method of claim 1, further comprising:
generating normalized complete filter results by dividing the complete filter results by a sum of the filter coefficients.

6. (Original) The method of claim 5, further comprising:
approximating the sum of the filter coefficients by a fraction having a power of 2 denominator;
multiplying each of the complete filter results by a numerator of the fraction to generate a product; and
right shifting the product by an exponent of the power of 2 denominator to normalize each of the complete filter results.

7. (Original) The method of claim 5, further comprising:
rounding the normalized complete filter results by adding to each of the complete filter results a value equal to half of the sum of the filter coefficients.

8. (Original) The method of claim 1, further comprising:
setting the filter coefficients to have a sum equal to a power of 2; and
normalizing the complete filter results by right shifting each of its pixels by a number of bits equal to an exponent of the power of 2.

9. (Currently Amended) A computer readable medium ~~or a modulated signal~~ being encoded to perform the method of claim 1.

10. (Currently Amended) A filter apparatus, comprising:

a ~~memory~~first memory storing a set of filter coefficients of a filter a filter that has at least two dimensions, wherein the at least two dimensions have $N \times N$ coefficients, and the at least two dimensions include a first dimension and a second dimension;

a zero padding device that zero pads the filter if N is an odd number, wherein the zero padding device pads the first dimension with a row of zeroes, and the zero padding device pads the second dimension with a column of zeroes;

a plurality of partial filters coupled to the memory, each of the plurality partial filters corresponding to a portion of the ~~filter~~ coefficients, the partial filters filtering image data to generate partial filtered results; ~~and results;~~

a filter output generator combining the partial filtered results to generate complete filter ~~outputs~~outputs; and

at least one of:

(i) a second memory device that stores the complete filter outputs;

(ii) an output device that outputs the complete filter outputs; and

(iii) a display device that displays the complete filter outputs.

11. (Canceled)

12. (Currently Amended) The filter apparatus of ~~claim 1~~, claim 10, further comprising:

a memory manager coupled to the memory, the memory manager deleting k^d image pixels from the memory after each set of partial filtered results are generated, where k^d is a sub-sampling ratio and d is a dimension of the filter.

13. (Currently Amended) The filter apparatus of ~~claim 1~~, claim 10, further comprising:

a complete filter outputs normalizer that normalizes the complete filter outputs by dividing each of the complete filter outputs by a sum of the set of coefficients, the normalizer right shifting each of the complete filter outputs by an exponent of a first power of

2 if the sum of the set of coefficients is the first power of 2, or multiplying each of the complete filter outputs by an integer and right shifting by an exponent of a second power of 2 if the sum of the set of coefficients is not a power of 2.

14. (Original) The filter apparatus of claim 13, further comprising:
a rounding device that rounds the normalized complete filter outputs prior to normalizing each of the complete filter outputs by adding to each of the complete filter outputs a value that equals to half of the sum of the set of coefficients.

15. (Currently Amended) A filter apparatus, comprising:
_____ means for zero padding a filter that has at least two dimensions, wherein the at least two dimensions have $N \times N$ coefficients, and the at least two dimensions include a first dimension and a second dimension, the means for zero padding pads the filter if N is an odd number, wherein the means for zero padding pads the first dimension with a row of zeroes, and the means for zero padding pads the second dimension with a column of zeroes;
_____ means for dividing ~~filter the~~ coefficients of a ~~filter the filter~~ into a plurality of partial portions; portions that correspond to a plurality of partial filters;
_____ means for zero padding the filter coefficients before dividing into the plurality of partial portions if a span N of the filter is odd;
_____ means for partial filtering image data to generate partial filtered results based on the partial portions of the ~~filter coefficients;~~ and coefficients;
_____ means for combining the partial filtered results to generate complete filter outputs. ~~outputs;~~ and
_____ at least one of:

- _____ (i) means for storing the complete filter outputs;
- _____ (ii) means for outputting the complete filter outputs; and
- _____ (iii) means for displaying the complete filter outputs

16. (Original) The filter apparatus of claim 15, further comprising:
means for deleting k^d image data pixels after the means for partial filtering
generates the partial filtered results, where $k^d:1$ is a sub-sampling ratio and d is a dimension
of the filter;

means for normalizing the complete filter outputs; and

means for rounding normalized complete filter outputs.

17. (Currently Amended) A xerographic marking device using the ~~method of~~
~~claim 1~~ apparatus of claim 10.

18. (Currently Amended) A digital photocopier using the ~~method of claim~~
~~1~~ apparatus of claim 10.